

tric survey with other branches of physical, geophysical, and cosmical work we may include: In oceanography and navigation—the study of local magnetic disturbances along coast lines, on islands and at sea as related to depths, bottom formations and earth-currents; in geology, geodesy and seismology—relations to magnetic and electric susceptibilities and character of materials in the crust of the earth, to gravity anomalies and to isostasy; in engineering and physics—relations to radio and telegraphic transmission, applications of magnetic and electric methods to mineral surveys and determinations, fundamental problems of magnetism, electricity and radiation; in meteorology and astronomy—relations to meteorological conditions including upper-air conditions, dust content and absorption and scattering of sun's radiation, to solar activity especially for measures other than visual, to penetrating radiation, to planetary motions, and to magnetic and electric conditions of heavenly bodies. All of these demand continued and incessant prosecution of the survey by observations at temporary stations and at fixed and floating observatories on the surface of the earth, in the upper regions of the atmosphere and in ocean depths, and in the physical laboratory and the astronomical observatory if we are to make nearer approach to the elucidation of the phenomena concerned. The continued cooperative efforts of international and national bodies and organizations and of physicists, geophysicists, astronomers, and astrophysicists must be looked forward to and counted upon in an ever-increasing degree in the future development and interpretation of the magnetic and electric survey of the earth.

PALEONTOLOGY.—*New Eocene mollusks from Jackson, Miss.*¹
WYTHE COOKE, U. S. Geological Survey.

For many years the writer has been accumulating data for a monographic account of the stratigraphy and paleontology of the formations of Jackson age in the United States, and from time to time he has published short papers dealing with the stratigraphy or correlation of some of those deposits.² As the completion of this report has been unavoidably delayed, it seems advisable to publish now some of the new species which were to have been described in it.

¹ Published by permission of the Director of the U. S. Geological Survey.

² The age of the Ocala limestone: U. S. Geol. Survey Prof. Paper 95: 107-117. 1915.
The stratigraphic position and faunal associates of the orbitoid foraminifera of the genus *Orthophragma* from Georgia and Florida: U. S. Geol. Survey Prof. Paper 108: 109-113. 1917.

All of the shells figured in this paper are in the U. S. National Museum. They were collected by Dr. T. Wayland Vaughan and the writer from the Jackson formation (upper Eocene) at the stations listed below. With the single exception of *Turritella rivurbana*, which came from the Yazoo clay member on Town Creek, all are from the Moodys marl, which forms the basal member of the Jackson formation and underlies the Yazoo clay. The illustrations are from photographs made in the laboratory of the U. S. Geological Survey by Mr. W. O. Hazard and retouched by Miss Frances Wieser.

Station 4250. Moodys Branch, Jackson, Miss.; from the first bluff below the first bridge east of the Institution for the Blind. T. W. Vaughan, 1900.

Station 6458. Moodys Branch, Jackson, Miss.; S. W. $\frac{1}{4}$ sec. 35, T. 6 N., R. 1 E. Wythe Cooke 1912.

Station 6466. Town Creek, Jackson, Miss.; 200 yards south of the intersection of Rankin and South State Streets. Wythe Cooke, 1912.

Terebra jacksonensis Cooke, n. sp. Fig. 1

Shell slender, apical angle about 20° , suture distinct; nucleus containing 3 or 4 smooth, polished, convex whorls; postnuclear whorls $9\frac{1}{2}$ in type, ornamented by even, rounded, slightly sinuous axial ribs which are cut by an impressed spiral line one-third the width of the whorl in front of the suture and which become obsolete at the anterior end of the body whorl. Rounded fasciole bordered posteriorly by a strong cord which terminates abruptly at the inner lip. Altitude $13\frac{1}{2}$ mm.; lat. of body whorl $3\frac{1}{2}$ mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,937.

This species, which is very abundant in the Moodys marl member at Jackson, somewhat resembles de Gregorio's figure of *T. andrega*, which has a deeper spiral furrow on the whorls.

Drillia dorseyi Cooke, n. sp. Fig. 2

Shell small, robust, apical angle 35° to 40° ; nucleus blunt, polished, containing about $3\frac{1}{2}$ convex whorls, about $\frac{3}{4}$ mm. long. Postnuclear whorls $4\frac{3}{4}$ in type, about $2\frac{1}{2}$ times as wide as long; polished, smooth or very faintly threaded back of the suture but distinctly threaded on the anterior half of the body whorl; decorated with 11 or 12 rounded, axial ribs on each whorl.

Deposits of Claiborne and Jackson age in Georgia (jointly with H. K. Shearer): U. S. Geol. Survey Prof. Paper 120: 41-81. 1918.

Correlation of the deposits of Jackson and Vicksburg ages in Mississippi and Alabama: This JOURNAL 8: 186-198. 1918.

Correlation of the Eocene formations in Mississippi and Alabama: U. S. Geol. Survey Prof. Paper 140: 133-136. 1925.

The Cenozoic formations [of Alabama]: Alabama Geol. Survey, Geology of Alabama (in press).

Suture distinct, somewhat flexuous. Canal straight; aperture about two-thirds as long as the body whorl. Outer lip broken. Alt. $5\frac{1}{4}$ mm.; lat. 2 mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,938.

Drillia dorseyi is smaller, less slender, and has a somewhat shorter nucleus than *D. tantula* (Conrad) from the Byram marl at Vicksburg. A somewhat larger shell of 5 whorls, measuring $6\frac{1}{2}$ mm. in altitude and $2\frac{1}{4}$ mm. in latitude, has only 7 ribs on each whorl. It may be a distinct variety.

Pleurotoma julia Cooke, n. sp. Fig. 3

Shell small, fusiform; apical angle about 30° . Nucleus large, smooth, tip broken, $2\frac{1}{2}$ whorls remaining. Postnuclear whorls $4\frac{1}{4}$ in type, shouldered cancellated; entire whorl covered by regularly spaced and nearly equal spiral threads, 7 threads on the third whorl; many low, rounded, protractive ribs becoming obsolete on the body whorl. Canal straight; aperture wide, three-sevenths as long as the shell; columella smooth; outer lip thin, smooth within. Sinus adjacent to the suture, shallow. Altitude 7 mm.; latitude $2\frac{1}{4}$ mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,939.

This pretty little species, of which only one specimen is in the National Museum collection, is given the obsolete name "Pleurotoma" because of the chaotic condition of the nomenclature of the Turritidae.

Cancellaria jacksonica Cooke, n. sp. Fig. 4

Shell large, stout, falsely umbilicated, apical angle about 60° . Nucleus naticoid, of 2 smooth whorls. Postnuclear whorls 5 in type, decorated with many spiral threads; ribs retractive, making an angle of about 25° with the axis, about twice as thick as the threads; 13 moderately large varices on type. Pillar lip with 3 folds; outer lip with 9 denticulations. Altitude 15 mm.; latitude $8\frac{1}{2}$ mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,940.

Cancellaria jacksonica is very abundant in the Moodys marl member of the Jackson formation at Jackson. It is stouter, more profusely ribbed, and has larger varices and more denticulations than *C. mississippiensis* Conrad, from Vicksburg.

Olivella jacksonensis Cooke, n. sp. Fig. 5

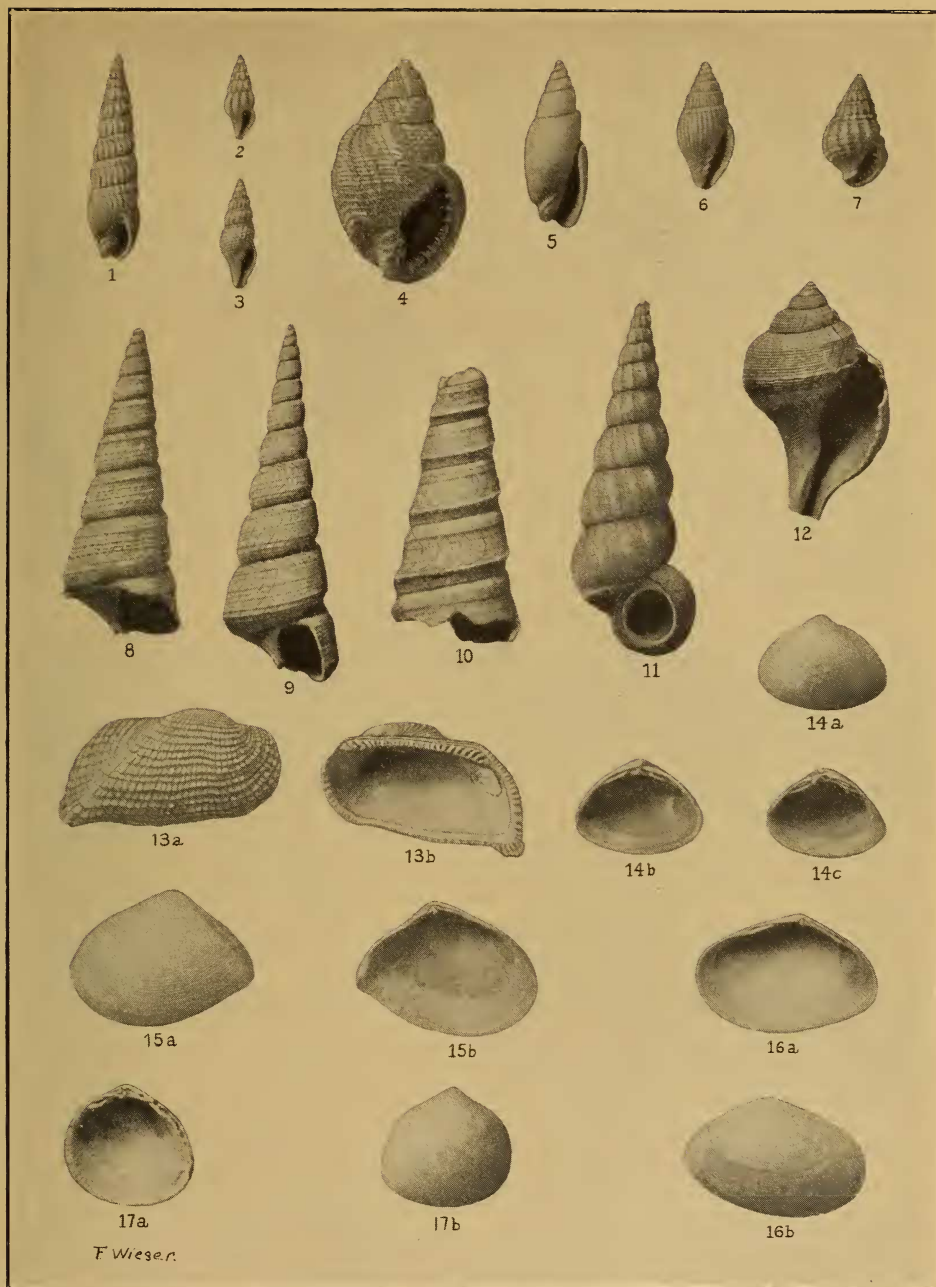
Shell small, spire high, apical angle about 40° . Nucleus spherical, $\frac{3}{4}$ mm. in diameter. Whorls $4\frac{1}{2}$ or 5, slightly convex, suture deep; no deposit of enamel behind the suture. Altitude 11 mm.; latitude 4 mm.; altitude of outer lip $5\frac{1}{2}$ mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,941.

This species is very common in the Moodys marl member at Jackson. Most of the shells are a little smaller than the type. *O. jacksonensis* is similar in general aspect to specimens from the Gosport sand at Claiborne, Ala., labelled *Oliva gracilis* Lea, which are somewhat higher-spired and have larger nuclei. The suture is like that of *O. mississippiensis* Conrad from the Byram marl at Vicksburg, but *O. mississippiensis* is much higher-spired and its nucleus is much larger.

Conomitra jacksonensis Cooke, n. sp. Fig. 6

Shell fusiform, stout, apical angle about 45° . Nucleus small, globular, smooth. Postnuclear whorls $5\frac{1}{4}$, cancellated, turritid; entire whorl except



Figs. 1-17.—Fig. 12 natural size; all others $\times 2$.

1—*Terebra jacksonensis*; 2—*Drillia dorseyi*; 3—*Pleurotoma julia*; 4—*Cancellaria jacksonica*; 5—*Olivella jacksonensis*; 6—*Conomitra jacksonensis*; 7—*Alectrion jacksonensis*; 8—*Turritella jacksonensis*; 9—*Turritella lowei*; 10—*Turritella rivurbana*; 11—*Epitonium cribrum*; 12—*Levifusus moodianus*; 13—*Barbatia jacksonensis*; 14—*Spisula jacksonensis*; 15—*Tellina vicksburgensis* var. *moodiana*; 16—*Tellina vaughani*; 17—*Cardium gardnerae*.

a narrow band in front of the suture covered with fine, impressed, spiral lines; axial sculpture of close, rounded riblets with interspaces as wide as the ribs, tending to form beads on the sutural band, becoming obsolete near the aperture. Inner lip with 4 strong, straight, parallel folds; outer lip with 14 threads within. Altitude $8\frac{1}{2}$ mm.; latitude 4 mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,942.

This species greatly resembles *Conomitra fusoides* (Lea), but its protoconch is smaller and its sculpture more uniform and more persistent than in the species from Claiborne.

***Alectrion jacksonensis* Cooke, n. sp. Fig. 7**

Shell small, robust, apical angle 50° . Nucleus small, smooth, globular, about 3 whorls. Postnuclear whorls 5, with a narrow band in front of the suture cut into beads by the ribs; area between the band and the periphery crossed by about 4 spiral striae; base of body whorl with spiral threads; axial riblets high, narrow. Outer lip thick, with 6 strong threads within; columella straight, short, with 5 short folds. Canal outcurved. Altitude $7\frac{1}{2}$ mm., latitude 4 mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,943.

The type of *Alectrion jacksonensis* is unique.

***Turritella jacksonensis* Cooke, n. sp. Fig. 8**

Shell rapidly expanding; apical angle 25° . Suture impressed. Whorls postero-medially constricted, twice as broad as high, ornamented with faintly nodular spiral threads which continue over the base. Growth lines deeply sinuated on the constriction and gently flexed on the periphery. Altitude 20 mm.; latitude 7 mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,944.

***Turritella lowei* Cooke, n. sp. Fig. 9**

Shell slender, apical angle 20° , becoming stouter with increasing growth. First 8 or 10 whorls nearly cylindrical or slightly constricted; later whorls flat. Suture deeply depressed; growth lines sigmoid. Sculpture of faint, spiral threads becoming more conspicuous on larger whorls; many young shells appear almost smooth. One or two whorls broken from tip of type; 12 whorls remaining. Altitude 23 mm.; latitude 8 mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,945.

***Turritella rivurbana* Cooke, n. sp. Fig. 10**

Apical angle about 20° . Whorls carinated, slightly constricted medially, suture depressed; spiral sculpture of one strong thread on the carina and several finer, widely spaced threads. Altitude of a fragment of 5 whorls 17 mm.; latitude 8 mm.

Station 6466, Town Creek, Jackson, Miss., U. S. N. M. No. 353,946.

In form, this species resembles *T. carinata* Lea from Claiborne, but lacks the crowded, microscopic, spiral threads, its suture is more depressed, and it differs also in the direction of its growth lines. In front of the carina the growth lines of *T. rivurbana* are strongly protractive (bent clockwise to the axis), making an obtuse angle with the lines behind the carina, but in *T. carinata* they are retractive and make an acute angle.

Epitonium cribrum Cooke, n. sp. Fig. 11

Subulate, apical angle about 25° . Nucleus small, of at least 4 smooth convex whorls (broken in type); 10 succeeding whorls moderately convex. Entire surface (including base and varices) covered by fine, close-set, reticulating threads which produce a punctate or sievelike appearance under the microscope. Axial sculpture of low, rounded, retractive ribs which become fainter on the larger whorls; strong, round, cordlike varices on fourth and seventh whorls and at the aperture; base with one strong cord. Altitude 23 mm.; latitude 8 mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,947.

Levifusus moodianus Cooke, n. sp. Fig. 12

Shell stout, apical angle 75° . Nucleus smooth, whorls rounded (tip broken). Postnuclear whorls $5\frac{1}{2}$, rounded, becoming faintly shouldered, covered with close spiral threads except a bare band on the anterior part of the body whorl. Canal long, straight (tip broken). Inner lip with two low broad folds. Outer lip thin, smooth within (broken). Altitude $31\frac{1}{2}$ mm.; latitude 20 mm.

Station 6458, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,948.

Barbatia jacksonensis Cooke, n. sp. Fig. 13a-b

Shell small, inflated, trapezoidal; beaks at the anterior fourth; with a more or less well defined depression extending from the umbones to the ventral margin; sharply angulated on the posterior slope; posterior border acutely angulated with the base; exterior surface strongly ribbed, the ribs somewhat farther apart on the posterior slope than elsewhere, strongly imbricated in harmony with the lines of growth. Longitude 13 mm.; altitude 8 mm.; semidiameter 3 mm.

Station 6458, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,949.

This species is much smaller than *B. cuculloidis*, from the young of which it differs in its greater inflation, stronger ribs, and much coarser and more even imbrication, which imparts to *B. jacksonensis* a cancellated appearance like a tile roof.

Spisula jacksonensis Cooke, n. sp. Fig. 14a-c

Shell small, subovate, moderately inflated; beaks central, adjacent; surface smooth except the dorsal areas, which are wrinkled; anterior dorsal area slightly depressed; base arcuate; pallial sinus little longer than wide, rounded in front; hinge with strong ventral lateral laminae, adjacent sides of laminae striated; arms of cardinal tooth of left valve forming a right angle. Longitude 8.2 mm.; altitude 6.2 mm.; semidiameter 2 mm.

Station 6458, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,950.

The type of *Spisula jacksonensis* is a left valve. This very abundant species differs from *S. funerata* (Conrad) from Vicksburg in its central beaks, more rounded base and shoulders, and in the symmetrical position and rectangular shape of its left cardinal tooth, which in *S. funerata* is twisted forward and forms an acute angle.

Tellina vicksburgensis var. *moodiana* Cooke, n. var. Fig. 15a-b

The variety at Jackson differs from the typical form at Vicksburg in its

larger size, proportionately greater altitude, and slightly stronger sculpture. Longitude $11\frac{1}{2}$ mm.; altitude 8 mm. semidiameter $2\frac{1}{2}$ mm.

Station 4250, Moodys Branch, Jackson Miss. U. S. N. M. No. 353,951.

Tellina vaughani Cooke, n. sp. Fig. 16a-b

Shell subelliptical, beaks slightly anterior, moderately inflated; anterior end somewhat more acute than the posterior; surface covered with close, flat, concentric threads which are fewer, narrower, and farther apart on the dorsal slopes. Longitude $11\frac{1}{2}$ mm.; altitude 8 mm.; semidiameter 3 mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,952.

Cardium (Laevicardium) gardnerae Cooke, n. sp. Fig. 17a-b

Shell small, rather thick, subcircular; entire surface smooth and polished, with faint radial markings; faintly ribbed within; worn shells more or less cancellated, with concentric ridges or wrinkles predominating; original color apparently purple. Longitude $8\frac{1}{2}$ mm.; altitude 8 mm.; semidiameter $2\frac{1}{2}$ mm.

Station 4250, Moodys Branch, Jackson, Miss. U. S. N. M. No. 353,953.

PROCEEDINGS OF THE ACADEMY AND AFFILIATED
SOCIETIES

ANTHROPOLOGICAL SOCIETY

591ST MEETING

The 591st meeting was held in the New National Museum October 20, 1925. Dr. JOHN M. COOPER read a paper on *The Têtes de Boule of the upper St. Maurice*, basing his remarks on two visits to them, one in 1916, the other in June, 1925. They are a hunting and trapping people who occupy most of the watershed of the St. Maurice River in Quebec, the northern band straddling at points the Hudson Bay divide. Some of the anthropometrical averages obtained for adult men were: stature, 168.6; cephalic index, 80.67; face breadth, 147.4. The linguistic material gathered seems to show quite clearly that the language spoken is a Cree dialect. The Têtes de Boule thus appear as the easternmost Cree. The chief phonetic change is Tête de Boule *r* for common Cree *y*. The northern band of the Têtes de Boule call themselves Obidjiwan iriniwäk, "men of Obidjiwan." They have the typical northeastern family hunting grounds, with inheritance usually in the male line and with use of selection and rotation for conserving the game supply. Marriage is usually patrilocal. Women are well treated. No trace of sib organization or of totemic tendencies was found. The chief has very limited power. There are two assistant chiefs. The chieftaincy is not necessarily hereditary, but actually tends to pass from father to son. Among the adolescent boys and girls, chums are common, but no indication of the gang appeared. Baskets are decorated with spruce root, but the double-curve motive, quill and moose hair ornamentation, and bark etching are absent. Psychically the Têtes de Boule are characterized by evenness of temper, good humor, truthfulness and honesty, and socially by marked peacefulness and democratic spirit. The social atmosphere and organization is distinctly non-competitive, even competitive play being seemingly absent.